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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,108	08/22/2003	Meir Rosenberg	022719-0045	8437

21125 7590 12/28/2006

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EXAMINER	
ROGERS, KRISTIN D	
ART UNIT	PAPER NUMBER
3736	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,108	ROSENBERG, MEIR	
	Examiner	Art Unit	
	Kristin D. Rogers	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *5,34 and 35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, and 6-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to because of the following informalities: Claim 6 is indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As recited, the Applicant has not identified the subject matter formed in the sidewall of the catheter. For the purpose of prosecution, the Examiner is interpreting claim 6 to recite, "...wherein the flexible membrane is formed in the sidewall of the catheter." Appropriate correction is required.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-4, 6, 9-10, 21-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. (4928693) in view of Bobo, Sr. (5573007). In regard to claims 1 and 29-30, Goodin et al. shows a pressure monitoring catheter

having a first lumen 20 that can be adapted to accommodate fluid flow, a second, separate, fluid-filled, fluid impermeable, sealed lumen 18 filled with an incompressible fluid (column 4, lines 19-20), extending between a pressure sensitive component 14, formed across a discontinuity formed in a sidewall of the catheter, adapted to be exposed to an external pressure source, and a pressure sensor-not shown- located at proximal end 16 of catheter (column 4, lines 23-24) for measuring pressure across an artery with increased accuracy (column 3 lines 65-39 and column 4 lines 18-29, Figure 4). The incompressible fluid disclosed in Goodin et al. is saline. The Examiner notes that it is known in the art that pressure sensing would not be possible unless the pressure sensitive component 14 were flexible, which would allow for the sensing component to transmit the sensed change in pressure to the pressure sensor for measuring pressure. However, Goodin et al. does not explicitly disclose that the pressure sensitive component 14 is a flexible membrane. Bobo, Sr. teaches the flexible membrane 24 disposed across an opening 22 formed in the sidewall (Fig. 6b). Therefore it would be obvious for one having ordinary skill in the art at the time of the invention to modify the distal pressure sensitive component 14 of Goddin et al. with a flexible membrane disposed across the distal opening of the sidewall as taught by Bobo, Sr. to obtain the invention as specified in claim 6 because such a modification would provide a flexible membrane disposed over an opening in the sidewall for measuring pressure. It is further noted that though a pressure sensor is not expressly disclosed, Goodin et al. inherently teaches a pressure sensor for measuring blood pressure in lumen 20 (column 4, lines 24-28) and an electronics module for measuring

pressure (Figure 5, column 3 lines 35-39). The Examiner submitts that Bobo, Sr. shows a pressure sensor located within the catheter for measuring pressure (column 7, lines 50-52). In regard to claim 2, Goodin et al. shows an elongate catheter including a sidewall 12 extending between the proximal and distal ends and a first lumen 18 with a fluid entry port 22 formed in the sidewall 12 and adjacent to the distal end. In regard to claim 3, Gooden et al. shows a pressure sensitive component 14 at the distal end of the second lumen 20 and the pressure sensor (not shown, see Figure 5, column 3 lines 35-39, column 4, lines 23-24) coupled to the proximal end 16 of the catheter. In regard to claim 4, Goodin et al. shows a pressure sensitive component 14 including a first surface in contact with fluid of the second lumen 20 with an opposed surface exposed to an external pressure source. In regard to claim 5, Goodin et al. shows a pressure sensitive component 14 comprising a flexible membrane as explained above (see rejection of claim 1). In regard to claim 9, Goodin et al. shows a second lumen 20 with a predetermined volume of fluid. The Examiner notes that it is inherent that a predetermined volume of the fluid within the lumen would be equivalent to the volume of the lumen since the second lumen 20 is constantly filled with an incompressible fluid (column 3, lines 45-49). In regard to claim 10, Goodin et al. shows a second lumen 20 free of voids (Figure 1). In regard to claim 21, Goodin et al. shows a sleeve-like pressure sensitive component 14 formed around the distal end of the catheter in fluid communication with the second lumen (Figure 1, column 3, lines 15-17). In regard to claim 22, Goodin et al. shows a pressure monitoring catheter having an elongate catheter 10, first lumen 18, second lumen 20 which is separate and fluid-filled, second

lumen extending between a pressure-sensitive component 14, and a pressure sensor 14 (Figure 1, see rejection above for Claim 1). In regard to claim 23, Goodin et al. shows a pressure sensor (not shown), which includes an electronics module (column 3, lines 35-39) coupled to the proximal end of the second lumen 20. In regard to claim 28, Goodin et al. shows the flexible sleeve (membrane) 14 formed around the distal end of the catheter in fluid communication with the second lumen 20 (see rejection of claim 1).

5. Claim 7 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al., as applied to claims 1, 5, and 22 above, and in view of Goldstein et al. (5899937). In regard to claims 7 and 25, Goodin et al. shows a pressure monitoring catheter as set forth above including a flexible membrane 14 (Figure 1). Goodin et al. lacks disclosure of the compliance of the flexible membrane. Goldstein et al. teaches a pulsatile flow system with a device comprising a membrane with adjustable compliance capable of duplicating a compliance value of 0.008 cm^3/mmHg, which is the equivalent of 8μL/mmHg (column 10, lines 25-38), instead of a flexible membrane with a compliance in the range of 0.05μL/mmHg to 2μL/mmHg as disclosed by the applicant. At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a flexible membrane with a compliance of 8μL/mmHg because Applicant has not disclosed that a membrane with a compliance in the range of 0.05μL/mmHg to 2μL/mmHg provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Goldstein et al.'s membrane and the Applicant's invention, to perform equally well with either the compliance as taught by Goldstein or

the claimed membrane compliance of 0.05μL/mmHg to 2μL/mmHg because both would perform the same function of causing a shift in equilibrium, with little force, and transferring the pressure signal to the sensor.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claims 1 and 5 above, in view of Fiddian-Green (5174290). Goodin et al. shows a pressure monitoring catheter as set forth above including a flexible membrane 14 (Fig. 1). Goodin et al. lacks disclosure of the material composition of the flexible membrane except for that it is plastic. Fiddian-Green teaches a tonometric catheter with first and second lumen, 22 and 28, and a flexible membrane 36 comprised of polydimethylsiloxane located at the distal tip for the purpose of providing an elastic material responsive to pressure changes (column 5, lines 17-34). It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Goodin et al. with a flexible membrane composed of a silicone as taught by Fiddian-Green for the purpose of providing a flexible pressure sensitive medium.

7. Claims 11-13, 16-20, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claims 1 and 22 above, in view of Brockway et al. (4846191). In regard to claim 11, Goddin et al. shows a pressure monitoring catheter as explained above. Goodin et al. lacks disclosure of the volume of the liquid contained in the lumen. Brockway et al. teaches a fluid-filled lumen capable of holding 3μL of fluid based on the dimensions of the lumen disclosed, which is in the range of 1μL to 10μL as claimed by the Applicant. In regard to claims 12 and 26, Goodin et al. shows a pressure monitoring catheter as set forth above, second lumen

20 which is separate and fluid-filled, second lumen extending between a pressure-sensitive component 14 comprising a flexible membrane, but lacks disclosure of the material properties of the fluid contained within the lumen. Goodin et al. teaches the use of the fluid saline, which possesses a low viscosity. Brockway et al. further teaches a device for measuring body pressure comprising a catheter 10 with a lumen 28 filled with a low viscosity silicone gel fluid 30 (column 5, lines 47-50). In regard to claim 13, Brockway teaches the use of a biocompatible low-viscosity silicone gel fluid within the lumen of the catheter (column 6, lines 1-10). In regard to claim 16, Goodin et al. shows a catheter with an outside diameter of 1.2mm and the first lumen 18 having a diameter of 0.3mm, and the second lumen 20 having a diameter of 0.4mm (column 3 lines 45-49), but lacks disclosure of the length dimension of the lumens. Brockway et al. teaches a device for measuring body pressure comprising a catheter 10 with a lumen 28 filled with a low viscosity silicone gel fluid 30 (column 5, lines 47-50). Brockway further discloses the fluid-filled lumen 28 has an inside diameter of 0.3 to 0.7 mm and a length of 5 to 25 cm, with both dimensions being adjustable depending on the test subject involved. In regard to claim 17, Goodin et al. shows a pressure monitoring catheter including a pressure-sensitive component 14 and a pressure sensor. Goodin et al. lacks disclosure regarding the compliance of the catheter and the pressure-sensitive component. Brockaway et al teaches a pressure transmission catheter with a catheter 120 having compliance less than the pressure sensitive component 130 (column 4 line 65 to column 5 line 65). In regard to claim 18, Brockaway et al. teaches a pressure transmission catheter comprised of a hollow tube made of low compliance

material 120. In regard to claims 19 and 27, Goodin et al. shows a pressure monitoring catheter as set forth above including a pressure sensor. Goodin et al. lacks disclosure of the frequency response of the pressure sensor. Brockway et al. teaches a device for measuring body pressure comprising a catheter 10 with a lumen 28 and a pressure sensor 16 that provides a dynamic response of 70Hz, which is greater than 20 Hz as cited in claims 19 and 27. In regard to claim 20, Goodin et al. shows a pressure monitoring sensor as set forth above including a pressure sensor. Goodin et al. lacks disclosure of the material properties of the sensor. Brockaway et al. teaches a pressure transmission catheter comprising a pressure transducer assembly 173 with a pressure sensor 174, which is a silicone sensor, in a housing 148. It is known that silicone is a relatively stiff material with low compliance that can range from 0.1μL/mmHg to 0.02μL/mmHg and is appropriate for optimizing the frequency response of the sensor. Therefore it would be obvious for one having ordinary skill in the art at the time of the invention to modify Goodin et al. with a fluid-filled lumen containing 1μL to 10μL of low viscosity biocompatible fluid; a fluid-filled lumen with a diameter in the range of 0.1mm to 0.3mm and a length of 8cm to 20cm; a low compliance catheter having compliance less than that of the pressure sensitive component; a pressure senor that has a frequency response of greater than 20Hz; and a sensor that is comprised of silicone as taught by Brockaway et al. since such modifications would optimize the performance of the pressure sensor.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claim 1, in view of Sgourakes (4638656). Goodin et al. shows a

pressure monitoring catheter as set forth above including a second lumen extending between a pressure-sensitive component 26 comprising a flexible membrane 24. Goodin et al. lacks disclosure of the viscosity of the fluid contained in the lumen. Sgourakes teaches a differential pressure transmitter 20 comprising a first and second lumen, 22 and 24, fluid-filled region 50, and flexible membranes 42 and 44. The viscosity of the fill-liquid in the fluid filled region 50 is 5 cs (column 4, lines 400-45) for the purpose of pressure detection. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Goodin et al. with a fill-liquid having a viscosity of 5 cs as taught by Sgourakes since such modification would provide an accurate measure of pressure.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable Goodin et al. as applied to claim 1 above, in view of Wallace et al (5951497). Goodin et al. shows pressure monitoring catheter having an elongate catheter 10, first lumen 18, and second lumen 20. Goodin et al. lacks teaching a first and second lumen where the second lumen is smaller in diameter. Wallace et al. teaches a pressure catheter device with a second lumen 32 having a smaller diameter than the first lumen 16 for the purpose of providing a space between the first and second lumen for fluid infusion (column 4, lines 19-25). Therefore it would have been obvious for one having ordinary skill in the art at the time of the invention to modify Goodin et al. with a second lumen having a smaller diameter than that of the first lumen as taught by Wallace et al. for the purpose of providing a passage between the first and second lumen.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. in view of Bobo, Sr. (5573007). Goodin et al. shows a pressure monitoring catheter as set forth above (Fig. 1). Bobo, Sr. teaches the flexible membrane 42a disposed across a discontinuity 82 formed in the sidewall (Fig. 7a) for fluid entry. Therefore it would be obvious for one having ordinary skill in the art at the time of the invention to modify Goodin et al. to have a flexible membrane disposed across a discontinuity in the sidewall as taught by Bobo, Sr. to obtain the invention as specified in claim 24 because such a modification would provide a flexible membrane covering the discontinuity in the sidewall for fluid entry and a more accurate pressure sensor.

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claim 29 above, in view of Bobo, Sr. (5573007). In regard to claim 30, Bobo, Sr. shows the pressure sensitive member 24 comprises a flexible membrane 64 that is formed across a discontinuity 66 formed in the sidewall of the catheter for fluid entry. Therefore it would be obvious for one having ordinary skill in the art at the time of the invention to modify Goodin et al. to have a flexible membrane disposed across a discontinuity in the sidewall as taught by Bobo, Sr. to obtain the method as specified in claim 30 because such a modification would provide a flexible membrane covering the discontinuity in the sidewall for fluid entry and a more accurate pressure sensor.

12. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claim 30 above, in view of Goldstein et al. (5899937). Goodin et al. shows a pressure monitoring catheter as set forth above including a flexible membrane 14. Goodin et al. lacks disclosure of the compliance of the flexible membrane.

Goldstein et al. teaches a pulsatile flow system with a device comprising a membrane with adjustable compliance capable of duplicating a compliance value of 0.008 cm^3/mmHg, which is the equivalent of 8μL/mmHg (column 10, lines 25-38), instead of a flexible membrane with a compliance in the range of 0.05μL/mmHg to 2μL/mmHg as disclosed by the applicant. At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a flexible membrane with a compliance of 8μL/mmHg because Applicant has not disclosed that a membrane with a compliance in the range of 0.05μL/mmHg to 2μL/mmHg provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Goldstein et al.'s membrane and the Applicant's invention, to perform equally well with either the compliance as taught by Goldstein or the claimed membrane compliance of 0.05μL/mmHg to 2μL/mmHg because both would perform the same function of causing a shift in equilibrium, with little force, and transferring the pressure signal to the sensor.

13. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodin et al. as applied to claim 29 above, in view of Brockway et al. (4846191). Goodin et al. shows a pressure monitoring catheter as set forth above including a second lumen extending between a pressure-sensitive component comprising a flexible membrane 14 and a pressure sensor (not shown, see column 3 lines 35-39 and column 4 lines 19-29). Goodin et al. lacks disclosure of the fluid contained in the lumen and its material properties and the frequency response of the pressure sensor. In regard to claim 32, Goodin et al. teaches the use of the fluid saline, which possesses a low

viscosity. Brockway et al. teaches a device for measuring body pressure comprising a catheter 10 with a lumen 28 filled with a low viscosity silicone gel fluid 30 (column 5, lines 47-50). In regard to claim 33, Brockway et al. teaches a device for measuring body pressure comprising a catheter 10 with a lumen 28 and a pressure sensor 16 that provides a dynamic response of 70Hz, which is greater than 20Hz as cited in the claimed invention. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Goodin et al. with a lumen filled with a low viscosity silicone fluid and a pressure senor that has a frequency response of greater than 20Hz as taught by Brockway et al. since such modification would provide a low viscosity fluid within the lumen of the catheter and a pressure sensor that could detect sensitive pressure changes.

Response to Arguments

4. Applicant's arguments with respect to claims 1-4 and 6-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristin D. Rogers whose telephone number is 571.272.7293. The examiner can normally be reached on Monday through Friday 8:00am - 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571.272.4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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